MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 5

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL				
Strand 1: Number and Operations				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Number Sense	1	Determine equivalency by converting between and among fractions, decimals, and percents when numerator and denominator are simple multiples.	8	Determine the equivalency between and among fractions, decimals, and percents in contextual situations.
	2	Relate prime and composite numbers; relate factors and multiples for whole numbers and fractions.	10	Recognize that 1 is neither a prime nor a composite number.
			11	Sort whole numbers (through 50) into sets containing only prime numbers or only composite numbers.
	3	Compare and order between and among three or more fractions, decimals, percents, or ratios in contextual or non-contextual situations.	4	Compare two proper fractions or improper fractions with like denominators.
			5	Order three or more unit fractions, proper or improper fractions with like denominators, or mixed numbers with like denominators.
			6	Compare two whole numbers, fractions, and decimals (e.g., 1/2 to 0.6).
			7	Order whole numbers, fractions, and decimals.
	M04-S1C1-01	**Moved to Grade 4**	1	Make models that represent improper fractions.
	M04-S1C1-01	**Moved to Grade 4**	2	Identify symbols, words, or models that represent improper fractions.
	M04-S1C1-01	**Moved to Grade 4**	3	Use improper fractions in contextual situations.
	M04-S1C1-03	**Moved to Grade 4**	9	Identify all whole number factors and pairs of factors for a number.

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MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 5

Strand 1: Number and Operations				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
2. Numerical Operations	1	Add and subtract whole numbers to any place value, fractions and decimals through thousandths accurately, efficiently, and flexibly in contextual and non-contextual situations.	1	Select the grade-level appropriate operation to solve word problems.
			2	Solve word problems using grade-level appropriate operations and numbers.
			10	Simplify fractions to lowest terms.
			11	Add or subtract proper fractions and mixed numbers with like denominators with regrouping.
			12	Add or subtract decimals.
	2	Multiply multi-digit whole numbers and decimals through thousandths accurately, efficiently, and flexibly in contextual and non-contextual situations.	1	Select the grade-level appropriate operation to solve word problems.
			2	Solve word problems using grade-level appropriate operations and numbers.
			3	Multiply whole numbers.
	3	Divide multi-digit whole numbers and decimals with dividends through thousandths and by whole number divisors accurately, efficiently, and flexibly with and without remainders in contextual and non-contextual situations.	1	Select the grade-level appropriate operation to solve word problems.
			2	Solve word problems using grade-level appropriate operations and numbers.
			4	Divide with whole numbers.
			13	Multiply decimals.
			14	Divide decimals.

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MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 5

Strand 1: Number and Operations				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
2. Numerical Operations	4	Multiply and divide benchmark fractions using models.*		
	5	Apply the properties of equivalence to solve numerical problems.	5	Demonstrate the distributive property of multiplication over addition.
			6	Demonstrate the addition and multiplication properties of equality.
			7	Apply grade-level appropriate properties to assist in computation.
	6	Simplify numerical expressions using the order of operations on number sets including fractions and decimals with or without grouping symbols.	8	Apply the symbol "[ ]" to represent grouping.
			15	Simplify numerical expressions using the order of operations with grade- appropriate operations on number sets.
		REMOVED (This skill is required throughout the standard).	9	Use grade-level appropriate mathematical terminology.
3. Estimation	1	Use benchmarks including powers of 10 and common fractions with odd denominators, as meaningful points of comparison to solve problems in and out of context.*		
	2	Estimate the results of computations with whole numbers, fractions, and decimals; verify solutions or determine the reasonableness of results in meaningful contexts.	1	Solve grade-level appropriate problems using estimation.
			2	Use estimation to verify the reasonableness of a calculation (e.g., Is 4.1 x 2.7 about 12?).
			3	Round to estimate quantities.
	M04-S4C4-01	**Moved to Grade 4**	4	Estimate and measure for area and perimeter.
	M03-S4C4-01	**Moved to Grade 3**	5	Compare estimated measurements between U.S. customary and metric systems (e.g., A yard is about a meter.).

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MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 5

Strand 2: Data Analysis, Probability, and Discrete Mathematics				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Data Analysis (Statistics)	1	Collect, generate, organize, and display data: • multi bar graphs and • double line graphs.	2	Construct a double-bar graph, line plot, frequency table, or three-set Venn diagram with appropriate labels and title from organized data.
			3	Interpret graphical representations and data displays including bar graphs (including double-bar), circle graphs, frequency tables, three-set Venn diagrams, and line graphs that display continuous data.
	2	Draw inferences and formulate questions from displays of data.	1	Formulate questions to collect data in contextual situations.
			3	Interpret graphical representations and data displays including bar graphs (including double-bar), circle graphs, frequency tables, three-set Venn diagrams, and line graphs that display continuous data.
			4	Answer questions based on graphical representations, and data displays including bar graphs (including double-bar), circle graphs, frequency tables, three-set Venn diagrams, and line graphs that display continuous data.
			6	Formulate reasonable predictions from a given set of data.
	3	Use median and mean to analyze and describe the distribution of the data in contextual situations, given a set of data or a graph.	4	Answer questions based on graphical representations, and data displays including bar graphs (including double-bar), circle graphs, frequency tables, three-set Venn diagrams, and line graphs that display continuous data.
			5	Identify the mode(s) and mean (average) of given data.
			8	Solve contextual problems using graphs, charts, and tables.
	M04-S2C1-04	**Moved to Grade 4**	7	Compare two sets of data related to the same investigation.

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MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 5

Strand 2: Data Analysis, Probability, and Discrete Mathematics				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
2. Probability	1	Describe the theoretical probability of events and represent using a fraction, decimal, or percent.	1	Name the possible outcomes for a probability experiment.
			2	Describe the probability of events as being: • certain (represented by "1"), • impossible, (represented by "0"), or • neither certain nor impossible • (represented by a fraction less than 1).
	2	Design experiments, record data, and predict and compare outcomes of an experiment.	3	Predict the outcome of a grade-level appropriate probability experiment.
			4	Record the data from performing a grade-level appropriate probability experiment.
			5	Compare the outcome of an experiment to predictions made prior to performing the experiment.
			6	Make predictions from the results of student-generated experiments using objects (e.g., coins, spinners, number cubes).
	3	Compare the results of multiple repetitions of the same probability experiment.	7	Compare the results of two repetitions of the same grade-level appropriate probability experiment.
3. Discrete Mathematics – Systematic Listing and Counting	1	Solve a variety of counting problems and justify that all possibilities have been enumerated without duplication.*		
	2	Analyze relationships among representations (arrays, charts, systematic lists, tree diagrams) and make connections to the multiplication principle of counting.*		
	M03-S2C3-02	**Moved to Grade 3**	1	Find all possible combinations when one item is selected from each of two sets of different items, using a systematic approach. (e.g., shirts: tee shirt, tank top, sweatshirt; pants: shorts, jeans).

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MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 5

Strand 2: Data Analysis, Probability, and Discrete Mathematics				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
4. Discrete Mathematics – Vertex-Edge Graphs	1	Analyze graph-related problems in finding the best solution to conflict resolution problems.		
	2	Investigate properties of vertex-edge graphs: • Euler path, • Euler circuit, • degree of a vertex, and • shortest route.		
	M03-S2C4-01	**Moved to Grade 3**	1	Color maps with the least number of colors so that no common edges share the same color (increased complexity throughout grade levels).

Strand 3: Patterns, Algebra, and Functions				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Patterns	1	Evaluate sequential patterns involving whole numbers and fractions (including decimals) using all four basic operations.	1	Communicate a grade-level appropriate iterative pattern, using symbols or numbers.
			2	Extend a grade-level appropriate iterative pattern.
			3	Solve grade-level appropriate iterative pattern problems.
2. Functions and Relationships	1	Use expressions to represent the rule of a function.	1	Describe the rule used in a simple grade-level appropriate function (e.g., T-chart, input/output model).

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MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 5

Strand 3: Patterns, Algebra, and Functions				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
3. Algebraic Representations	1	Evaluate expressions by substituting whole numbers, decimals, and fractions for the variable.	1	Evaluate expressions involving the four basic operations by substituting given decimals for the variable.
	2	Create and solve equations with one variable represented by a letter or symbol given a contextual situation.	2	Use variables in contextual situations.
			3	Solve one-step equations with one variable represented by a letter or symbol (e.g., $15 = 45 \div n$).
4. Analysis of Change	1	Describe patterns of change including constant rate and increasing or decreasing rate.	1	Describe patterns of change: • constant rate (speed of movement of the hands on a clock), and • increasing or decreasing rate (rate of plant growth).

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MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 5

Strand 4: Geometry and Measurement				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Geometric Properties	1	Classify quadrilaterals by their properties.	1	Recognize regular polygons.
	2	Draw and label 2-dimensional figures given specific attributes including angle measure and side length.	2	Draw 2-dimensional figures by applying significant properties of each (e.g., Draw a quadrilateral with two sets of parallel sides and four right angles.).
			11	Draw two congruent geometric figures.
			12	Draw two similar geometric figures.
	3	Solve problems by understanding and applying the property that the sum of the interior angles of a triangle is 180°.	10	Understand that the sum of the angles of a triangle is 180°.
		REMOVED	3	Sketch prisms, pyramids, cones, and cylinders.
	M02-S4C1-01 M03-S4C1-02	**Moved to Grade 2 (2-dimensional) and Grade 3 (3-dimensional)**	4	Identify the properties of 2- and 3-dimensional geometric figures using appropriate terminology and vocabulary.
	M04-S4C1-02 M04-S4C1-06	**Moved to Grade 4**	5	Draw points, lines, line segments, rays, and angles with appropriate labels.
	M06-S4C1-02	**Moved to Grade 6**	6	Recognize that all pairs of vertical angles are congruent.
	M04-S4C1-07	**Moved to Grade 4**	7	Classify triangles as scalene, isosceles, or equilateral.
	M06-S4C1-01	**Moved to Grade 6**	8	Recognize that a circle is a 360º rotation about a point.
	M06-S4C1-01	**Moved to Grade 6**	9	Identify the diameter, radius, and circumference of a circle.
	M03-S4C2-01	**Moved to Grade 3**	13	Identify the lines of symmetry in a 2-dimensional shape.

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MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 5

Strand 4: Geometry and Measurement				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
2. Transformation of Shapes	1	Demonstrate reflections using geometric figures (axis of reflection bisects figure).	1	Demonstrate reflections using geometric figures.
	M08-S4C2-03	**Moved to Grade 8**	2	Describe the transformations that created a tessellation.
3. Coordinate Geometry		**No performance objectives at this grade level.**		
	M04-S4C3-01	**Moved to Grade 4**	1	Graph points in the first quadrant on a grid using ordered pairs.
4. Measurement	1	Solve problems using elapsed time.*		
	2	Measure angles between 0 and 360 degrees.*		
	3	State an appropriate measure and degree of accuracy for a contextual situation.	1	State an appropriate measure of accuracy for a contextual situation (e.g., What unit of measurement would you use to measure the top of your desk?).

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MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 5

Strand 4: Geometry and Measurement				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
4. Measurement	4	Solve area and perimeter problems involving regular and irregular polygons using reallotment of square units.	5	Solve problems involving the perimeter of convex polygons.
			6	Determine the area of figures composed of two or more rectangles on a grid.
			7	Solve problems involving the area of simple polygons.
	5	Solve problems involving the area of plane figures by using the properties of parallelograms and triangles.*	7	Solve problems involving the area of simple polygons.
	6	Compare attributes of 2-dimensional figures with 3-dimensional figures by drawing and constructing nets and models.*		
	7	Determine relationship between the volume of a figure and area of its base.*		
	M04-S4C1-05 M04-S4C1-06	**Moved to Grade 4**	2	Draw 2-dimensional figures to specifications using the appropriate tools (e.g., Draw a circle with a 2-inch radius.).
	M04-S4C4-04	**Moved to Grade 4**	3	Determine relationships including volume (e.g., pints and quarts, milliliters and liters).
	M04-S4C4-04	**Moved to Grade 4**	4	Convert measurement units to equivalent units within a given system (U.S. customary and metric) (e.g., 12 inches = 1 foot; 10 decimeters = 1 meter).
	M04-S4C4-06	**Moved to Grade 4**	8	Describe the change in perimeter or area when one attribute (length, width) of a rectangle is altered.

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MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 5

Strand 5: Structure and Logic				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Algorithms and Algorithmic Thinking	1	Discriminate necessary information from unnecessary information in a given word problem.	1	Discriminate necessary information from unnecessary information in a given grade-level appropriate word problem.
	2	Analyze common algorithms for computing with decimals using the commutative and associative property and concepts of place value.*		
	3	Develop an algorithm or formula to calculate areas of simple polygons.	3	Develop an algorithm or formula to calculate areas of simple polygons.
	M04-S5C1-02	**Moved to Grade 4**	2	Design simple algorithms using whole numbers.
2. Logic, Reasoning, Arguments, and Mathematical Proof	1	Develop the problem-solving strategy of using logic *(if . . . then* and logical reasoning).*		
	2	Solve a non-routine problem by selecting and using a strategy.*		
	3	Identify simple valid arguments using *if* … *then* statements based on graphic organizers (e.g., 3-set Venn diagrams and pictures).	2	Identify simple valid arguments using *if* … *then* statements based on graphic organizers (e.g., 3-set Venn diagrams and pictures).
	4	Construct *if…then* statements to generalize rules for computation, geometric properties, and algebraic functions.	1	Construct *if…then* statements.

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